

COURSE PATENT

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Interpolation is one technique used in image processing to enlarge images. When you magnify an image, you essentially have to create new pixels to fill in the spaces between the existing pixels.

Interpolation helps create these new pixels by computing their values based on neighbouring pixels. There are several interpolation methods available; the most widely used ones are as follows:

Using the nearest neighbour interpolation approach, the nearest pixel value is simply copied to a new location. While this is the quickest method, it sometimes leads to block artifacts, especially when the image is magnified.

In bilinear interpolation, the weighted average of the four pixels that are closest to the desired place is utilized. Compared to nearest neighbour interpolation, it is a rapid and simple process, but it may result in a loss of information and sharpness.

Bicubic interpolation:

Interpolation using bicubic: This advanced method uses pixels in a broader area, usually the 16 nearest pixels in a 4x4 grid, to fit a cubic function to estimate pixels. In contrast to bilinear interpolation, this typically produces smoother and more visually pleasing results.

outcomes, but it requires more processing power.

Lanczos resampling is an additional advanced technique that uses a windowed sinc function to interpolate pixel values. When photographs are zoomed in, this approach often produces less blur and crisper results than bicubic interpolation. On the other hand, it may also cause noisy artifacts along edges with strong contrast.

Spline interpolation: This method fits a piecewise polynomial function to nearby pixel values from the intended location. Although it could require more processing power, this can produce very good results with minimal artifacts.